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10/045,883	01/09/2002	Sanjaya Kumar	ANDIP007	1172

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EXAMINER

SERRAO, RANODHI N

ART UNIT	PAPER NUMBER
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2141

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/045,883

Applicant(s)

KUMAR ET AL.

Examiner

Ranodhi Serrao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-29 and 31-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-29 and 31-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 01 December 2006 have been fully considered but they are not persuasive.
2. The applicant argued in substance the limitation of independent claim 21, "wherein the virtualization message indicates that the physical port is to handle messages addressed to an address or identifier assigned to the virtual port." However, there is no support in the instant application's specification for this claimed limitation. The previous office action has been withdrawn in order to point out this enablement issue, but the rejections under 35 U.S.C. 102 and 35 U.S.C. 103 are maintained. See below for clarification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claims 1, 3-29, and 31-52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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5. The limitation of claim 21, "wherein the virtualization message indicates that the physical port is to handle messages addressed to an address or identifier assigned to the virtual port," (emphasis added) is not recited in the specification. This limitation is similarly stated in independent claims 1, 16-20, 32-35, and 50-52 and also in various dependent claims. Nowhere in the specification is **a physical port** instructed to handle or handling messages addressed to an address or identifier assigned to the virtual port. Emphasis added. ¶ 15 of the instant application reads, "In accordance with another aspect of the invention, **a port** of a network device within the storage area network is instructed to handle messages on behalf of a virtual enclosure port." Emphasis added. A port of a network device does not have to be limited to a physical port, it can be virtual, physical, logical etc. Furthermore ¶ 87 states, "For instance, as shown at 928 a trap message indicating that the virtualization port2 906 is to handle messages addressed to an address or identifier assigned to a particular virtual enclosure port is sent." Virtualization port2 906 is clearly not a physical port. Nowhere is there a physical port mentioned in the disclosure much less a physical port instructed to handle messages addressed to an address or identifier assigned to the virtual port. Therefore, one of ordinary skill in the art cannot identify this missing information without undue experimentation. See MPEP § 2164.04.

6. For the purposes of the rejections maintained under 35 U.S.C. 102 and 35 U.S.C. 103, the examiner interprets "a physical port" to be "a port."

Claim Rejections - 35 USC § 102

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7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claim 21 is rejected under 35 U.S.C. 102(e) as being anticipated by Terrell et al. (2003/0210686).

9. As per claims 21, Terrell et al. teaches in a first network device a method of implementing storage virtualization in a storage area network, the method comprising: sending a virtualization message to a physical port of a second network device within the storage area network, the virtualization message instructing the physical port to handle messages addressed to a virtual port of a virtual enclosure, the virtual enclosure having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network (§ 25), wherein the virtualization message indicates that the physical port is to handle messages addressed to an address or identifier assigned to the virtual port (§ 228-238); and receiving a virtualization response from the physical port of the network device in response to the virtualization message (§ 308).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1, 3-14, 19, 21-28, 37, 39, 43, 46, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau et al. (6,260,120) and Terrell et al.

13. As per claim 1, Blumenau et al. teaches a method of implementing storage virtualization in a storage area network (see Blumenau et al., column 8, lines 5-10), the method comprising: creating a virtual enclosure, the virtual enclosure having one or more virtual ports and being adapted for representing one or more virtual storage units, each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network (see Blumenau et al., column 7, lines 16-23); associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network (see Blumenau et al., column 18, lines 8-34), thereby enabling one or more network devices within the storage area network to be associated with the virtual ports (see Blumenau et al., col. 25, lines 8-28); and assigning an address or identifier to each of the virtual ports (see Blumenau et al., column 11, line 58-column 12, line 8). But fails to teach a method wherein associating

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each of the virtual enclosure ports of the virtual enclosure with a port of a network device within the storage area network, includes: sending a message from a first network device to a physical port of a second network device within the storage area network to instruct the physical port of the second network device to handle messages addressed to the address or identifier assigned to the associated virtual port, thereby enabling the first network device to instruct the physical port of the second network device to act on behalf of the virtual port. However, Terrell et al. teaches a method wherein associating each of the virtual enclosure ports of the virtual enclosure with a port of a network device within the storage area network, includes: sending a message from a first network device to a physical port of a second network device within the storage area network to instruct the physical port of the second network device to handle messages addressed to the address or identifier assigned to the associated virtual port (see Terrell et al., ¶ 158), thereby enabling the first network device to instruct the physical port of the second network device to act on behalf of the virtual port (see Terrell et al., ¶ 237). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Blumenau et al. to wherein associating each of the virtual enclosure ports of the virtual enclosure with a port of a network device within the storage area network, includes: sending a message from a first network device to a physical port of a second network device within the storage area network to instruct the physical port of the second network device to handle messages addressed to the address or identifier assigned to the associated virtual port, thereby enabling the first network device to instruct the physical port of the second network device to act on

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behalf of the virtual port in order to implement storage virtualization by receiving a frame from the network, determining by parsing the frame, the protocol and logical unit number, and routing the frame to a queue according to a traffic class associated with the logical unit number in routing information prepared for the processors (see Terrell et al., abstract).

14. As per claim 3, Blumenau et al. and Terrell et al. teach a network device, wherein the storage area network is a virtual storage area network (see Blumenau et al., column 24, lines 31-55).

15. As per claim 4, Blumenau et al. and Terrell et al. teach a network device, wherein a Node World Wide Name is associated with the virtual enclosure (see Blumenau et al., column 11, lines 15-24).

16. As per claim 5, Blumenau et al. and Terrell et al. teach the mentioned limitations of claims 1 and 4 above but Blumenau et al. fails to teach a network device, wherein a Port World Wide Name is assigned to each of the virtual ports such that the Port World Wide Name is associated with an associated physical port of a network device within the storage area network. However, Terrell et al. teaches a network device, wherein a Port World Wide Name is assigned to each of the virtual ports such that the Port World Wide Name is associated with an associated physical port of a network device within the storage area network (see Terrell et al., ¶ 96). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Blumenau et al. to a network device, wherein a Port World Wide Name is assigned to each of the virtual ports such that the Port World Wide Name is associated with an associated physical

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port of a network device within the storage area network in order to develop routing information between physical entities by routers without user intervention (see Terrell et al., ¶ 97).

17. As per claim 6, Blumenau et al. and Terrell et al. teach the mentioned limitations of claim 1 above but Blumenau et al. fails to teach a network device, wherein the physical port of the second network device within the storage area network is a port of a fibre channel device. However, Terrell et al. teaches a network device, wherein the physical port of the second network device within the storage area network is a port of a fibre channel device (see Terrell et al., ¶ 217). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Blumenau et al. to a network device, wherein the physical port of the second network device within the storage area network is a port of a fibre channel device in order to implement storage virtualization by receiving a frame from the network, determining by parsing the frame, the protocol and logical unit number, and routing the frame to a queue according to a traffic class associated with the logical unit number in routing information prepared for the processors (see Terrell et al., abstract).

18. As per claim 7, Blumenau et al. and Terrell et al. teach a network device, wherein an FCID is assigned to each of the virtual ports (see Blumenau et al., column 28, lines 33-51).

19. As per claim 8, Blumenau et al. and Terrell et al. teach a method, further comprising: selecting a number of virtual enclosure ports to be included in the virtual (see Blumenau et al., column 24, lines 10-33).

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20. As per claim 9, Blumenau et al. and Terrell et al. teach a network device, wherein the number of virtual ports of the virtual enclosure is greater than a number of ports of each network device within the storage area network (see Blumenau et al., column 18, lines 8-34).

21. As per claim 10, Blumenau et al. and Terrell et al. teach a method, wherein associating each of the virtual ports of the virtual enclosure with a port of a second network device within the storage area network comprises: associating the virtual ports with ports of one or more network devices within the storage area network (see Blumenau et al., column 25, lines 29-49).

22. As per claim 11, Blumenau et al. and Terrell et al. teach a network device, wherein associating each of the virtual ports of the virtual enclosure with a port of a network device within the storage area network comprises: sending a bind message to a port of a network device within the storage area network (see Blumenau et al., col. 24, lines 10-33), thereby binding the port of a network device within the storage area network to one or more of the virtual ports (see Blumenau et al., column 10, lines 42-67).

23. As per claim 12, Blumenau et al. and Terrell et al. teach a network device, further comprising: sending a trap message to one or more additional ports of one or more network devices within the storage area network (see Blumenau et al., col. 41, lines 22-53), thereby instructing the one or more additional ports of one or more network devices within the storage area network to trap messages directed to one of the virtual ports (see Blumenau et al., column 41, lines 8-21).

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24. As per claim 13, Blumenau et al. teaches a network device, wherein one or more of the virtual storage units each comprises a VLUN or other virtual representation of storage on the storage area network (see Blumenau et al., column 24, lines 34-55 and column 43, lines 1-21).

25. As per claim 14, Blumenau et al. and Terrell et al. teach a method, farther comprising: assigning one or more virtual storage units to the virtual enclosure (see Blumenau et al., column 24, lines 34-55).

26. As per claim 19, Blumenau et al. teaches a method of performing LUN mapping in a storage area network, the method comprising: accessing a LUN mapping table having one or more entries (see Blumenau et al., column 7, lines 9-11), each of the entries identifying an initiator in the storage area network, one or more of a set of one or more virtual ports of a virtual enclosure, and associating a specified logical unit with one or more virtual storage units (see Blumenau et al., column 27, lines 23-38), each of the virtual storage units representing one or more physical storage locations on one or more physical storage units of the storage area network (see Blumenau et al., column 24, lines 10-33), and when a request for the specified logical unit is received from the initiator via one of the associated virtual ports, identifying one of the entries in the LUN mapping table and employing the one or more virtual storage units specified in the entry to service the request (see Blumenau et al., column 29, lines 43-56). But fails to teach wherein the virtual enclosure is adapted for representing the set of one or more virtual storage units and each of the virtual enclosure ports is associated with a port of a network device within the storage area network, wherein the port of the network device

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has received a message from another network device instructing the port to handle messages addressed to the associated virtual port. However, Terrell et al. teaches wherein the virtual enclosure is adapted for representing the set of one or more virtual storage units and each of the virtual enclosure ports is associated with a port of a network device within the storage area network, wherein the port of the network device has received a message from another network device instructing the port to handle messages addressed to the associated virtual port (see Terrell et al., ¶ 158). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Blumenau et al. to wherein the virtual enclosure is adapted for representing the set of one or more virtual storage units and each of the virtual enclosure ports is associated with a port of a network device within the storage area network, wherein the port of the network device has received a message from another network device instructing the port to handle messages addressed to the associated virtual port in order to implement storage virtualization by receiving a frame from the network, determining by parsing the frame, the protocol and logical unit number, and routing the frame to a queue according to a traffic class associated with the logical unit number in routing information prepared for the processors (see Terrell et al., abstract).

27. As per claim 22, Terrell et al. teaches the mentioned limitations of claim 21 above but fails to teach an apparatus, wherein the virtual port is identified by a NWWN and a PWWN. However, Blumenau et al. teaches a method, wherein the virtual enclosure port is identified by a NWWN and a PWWN (see Blumenau et al., column 12, lines 27-54). It would have been obvious to one having ordinary skill in the art at the time of the

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invention to modify Terrell et al. to a method, wherein the virtual enclosure port is identified by a NWWN and a PWWN in order to create a method that may be transparent to any high-level file system procedures that may be used by the hosts for managing access to files stored in the logical volumes to which a host is permitted to access (see Blumenau et al., col. 2, lines 19-41).

28. As per claims 23-31 and 36-49, the above-mentioned motivation of claim 22 applies fully in order to combine Blumenau et al. and Terrell et al.

29. As per claim 23, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization response indicates that the physical port is configured to handle messages addressed to the virtual port of the virtual enclosure (see Terrell et al., ¶ 25).

30. As per claim 24, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization message indicates that the physical port is to obtain an address or identifier assigned to the virtual port (see Terrell et al., ¶ 25).

31. As per claim 25, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization message is a bind message or a trap message (see Blumenau et al., column 11, lines 41-57).

32. As per claim 26, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization response comprises the address or identifier assigned to the virtual port (see Blumenau et al., column 11, line 58-column 12, line 8).

33. As per claim 27, Blumenau et al. and Terrell et al. teach an apparatus, wherein the virtualization message indicates that the port is to obtain an address or identifier assigned to the virtual enclosure port from a DNS server (see Terrell, ¶ 96).

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34. As per claim 28, Blumenau et al. and Terrell et al. teach a method, further comprising: receiving an address or identifier assigned to the virtual port (see Blumenau et al., column 12, lines 27-54).

35. As per claim 37, Blumenau et al. and Terrell et al. teach a method, further comprising: obtaining and storing the address or identifier assigned to the virtual port (see Blumenau et al., column 12, lines 27-54).

36. As per claim 39, Blumenau et al. and Terrell et al. teach a method, further comprising: sending the address or identifier assigned to the virtual port (see Blumenau et al., column 12, lines 27-54).

37. As per claim 43, Blumenau et al. and Terrell et al. teach a method, further comprising: handling messages addressed to the address or identifier assigned to the virtual port (see Blumenau et al., column 16, line 60-column 17, line 19).

38. As per claim 46, Blumenau et al. and Terrell et al. teach a method, further comprising: receiving a report message requesting an identification of one or more of the virtual storage units supported by an address or identifier assigned to one of the virtual ports (see Blumenau et al., column 12, lines 27-54); sending a reply message identifying one or more of the virtual storage units (see Blumenau et al., column 25, lines 50-67).

39. As per claim 49, Blumenau et al. and Terrell et al. teach a method, wherein the one or more of the virtual storage units identified in the reply message are those virtual storage units that are visible to an initiator sending the report message (see Blumenau et al., column 25, lines 50-67).

40. Claims 15-18, 20, 29, 31-36, 38, 40-42, 44, 45, 47, 48, and 50-52 have similar limitations as to claims 1, 3-14, 19, 21-28, 37, 39, 43, 46, and 49, therefore, they are being rejected under the same rationale.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ranodhi Serrao whose telephone number is (571)272-7967. The examiner can normally be reached on 8:00-4:30pm, M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on (571)272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KENNETH R. COULTER
PRIMARY EXAMINER

